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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/811,401	03/20/2001	Yoshihide Yamaguchi	500.39919X00	4083

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EXAMINER

CRUZ, LOURDES C

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 02/13/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/811,401

Applicant(s)

YAMAGUCHI ET AL.

Examiner

Lourdes C. Cruz

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 15 and 16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 17-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 15 and 16 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 13 May 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-14,17-19,21-24,26-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Shimoishizaka et al. (US 6313532).

Shimoishizaka et al. discloses a semiconductor device comprising a semiconductor element 10 having a circuit surface on which a plurality of circuit electrodes are disposed, said circuit surface being coated with protective film 12, a stress relaxation layer 20 which is formed on the protective film 12 of the circuit surface of said semiconductor element so as to expose the circuit electrodes 11, is made of a cured thermoplastic resin and has an inclination in the edge portion thereof, a wiring layer 32 consisting of a plurality of wirings, each of said wirings being connected to one of the circuit electrodes and disposed so as to make an electrical connection from the electrodes, via the edge portion of 20 and to a desired site on the surface of 20, a

surface protective film 50 which covers the surface of the wiring layer so as to expose a prescribed portion on each of the plurality of wirings on the surface of 20, and an external connection terminal formed by connecting a bump 40 to said prescribed exposed portion of each of the plurality of wirings.

- see that the inclined edge has a swelling/protuberant portion and a deflected portion is formed in the wiring on said swelling portion. Also see that the protuberant portion is formed between the inclined edge and a flat portion. See that “a height” does not imply total height of the portion, and that therefore the claimed heights are anticipated
- see that claim 3 doesn't further structurally define the claimed structure. Instead, the claim recites a product by process limitation, which doesn't further distinguish what is claimed from the prior art, and has no patentable weight.
- see Col. 7 line 9 wherein the CTE of the stress relaxation layer is disclosed, and Col. 7, line 6 wherein the range of preferred thickness is disclosed— **Claims 7,13**—; see that not only are polyimides, polyamides, polyamide-imide, epoxies, phenolic and silicone common in the art, but also that Shimoishizaka et al. discloses such by disclosing a same CTE, which is characteristic of the claimed materials.

- see that the total width in the edge portion of the relaxation layer is greater than the width under a flat portion –e.g. under bump 40--, at least regarding signal wirings.
- see that Shimoishizaka et al. discloses a substrate-mounted semiconductor.

See that Shimoishizaka et al. also discloses:

- See wirings on the protrusion (see 30,31,32)
- See deflected portion on slope
- See that the preparation of the claimed thermoplastic does not distinguish the claimed device over the prior art. A "Product by Process" claim is directed to the product per se, no matter how actually made, In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Marosi et al, 218 USPQ 289; and particularly In re Thorpe, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product

by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

- See that the prior art discloses multiple wirings with different shapes. See that any of them read on "signal line", "ground line", "electric source".
- Recitation of "a width" (see for example, claim 27) does not imply total width, therefore the prior art anticipates the claimed width
- See page 64, lines 20+ wherein the current application specifically states that "thermoplastic" and "thermosetting" materials are interchangeable for the purpose of this invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 20,25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimoishizaka et al. in view of Ogashiwa (US5550407) .

See that Shimoishizaka et al. discloses all the structural limitations above. However, Shimoishizaka et al. fails to specifically disclose lead free terminals. See that Ogashiwa teaches the formation of such (see tables 25 and 26, for example) in order to

establish electrical connection of a package to a substrate. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Ogashiwa to those of Shimoishizaka et al. in order to provide electrical connection between the package and the substrate.

Response to Arguments

Applicant's arguments filed 5-13-02 have been fully considered but they are not persuasive. Applicant argues:

- The prior art fails to teach a thermoplastic
- The melting point temperature of the thermoplastic and the glass transition temperature are not disclosed

The above is not persuasive because:

- See citation above of pages and lines of the present application that suggest interchangeability of thermoplastic and thermosetting resins in the claimed device
- Since the prior art, as discussed above, discloses a device and a resin with properties that read on the claims, it inherently discloses the melting temperature of the thermoplastic and the glass transition temperature

Moreover, labels, statements of intended use, or functional language such as we have here in "thermoplastic" does not structurally distinguish the claim over the prior art

which shows a structure that may likewise be labeled, used or function as a "thermoplastic" rather than a "low elastic modulus layer" 20.

The label "thermoplastic resin" in the claims does not structurally distinguish over the "low elastic modulus" "thermoplastic resin" layer 20 of Shimoishizaka et al.. There are no recitations of exact thermoplastic resins in claim 1 which would structurally distinguish over the applied art. There are no magnitudes of "thermoelasticity" which would distinguish over the applied art. See *In re Pearson* 181 USPQ 641, *Ex parte Minks* 169 USPQ 120, and *In re Swinwhart* 169 USPQ 226, where it was decided that mere labels do not structurally distinguish over prior art which may be likewise labeled.

Additionally, even if "thermoplastic" or "thermosetting" were not labels, see that page 64, lines 20+ -- of the present application-- wherein the current application specifically states that thermoplastic and thermosetting materials are interchangeable for the purpose of this invention. For at least this reason, the prior art above need not disclose whether the material used is thermoplastic or thermosetting.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

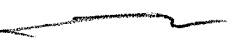
TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lourdes C. Cruz whose telephone number is 703-306-5691. The examiner can normally be reached on M-F 8:00- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-308-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Lourdes C. Cruz
Examiner
Art Unit 2815



Lourdes Cruz
January 7, 2003

JEROME JACKSON
PRIMARY EXAMINER